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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/700,142	11/09/2000	Alessandra Pavesio	515-4210	1911

7590 03/02/2004

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EXAMINER

JONES, DWAYNE C

ART UNIT	PAPER NUMBER
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1614

DATE MAILED: 03/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/700,142	<b>Applicant(s)</b> PAVESIO ET AL.	
	<b>Examiner</b> Dwayne C Jones	<b>Art Unit</b> 1614	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 36,37 and 41-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 36,37 and 41-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 36, 37, and 41-45 are pending.
2. Claims 36, 37, and 41-45 are rejected.

### ***Response to Arguments***

3. Applicants' arguments filed December 3, 2003 have been fully considered but they are not persuasive. Applicants present the following allegations. First, applicants argue that Dorigatti et al. fail to disclose of the 65% partial benzyl ester of HA as pointed out in the amended claims. Second, applicant purport that Dorigatti et al. is directed to HA benzyl esters, which were either totally esterified or have a very high degree of esterification. Third, the only example of Dorigatti et al. only disclose of HA esters with aliphatic alcohols which are completely different from the present HA esters with benzyl alcohol. Fourth, the 50% esterified HA derivatives of Dorigatti et al. are salified with a metal on the remaining carboxylic acid groups of HA, which vary from the instantly claimed HA esters. Fifth, applicants allege that the instantly claimed benzyl esters of HA with a degree of esterification of 65% are superior to the Dorigatti et al. esters of HA as demonstrated in examples 12, 14, 27, 29, and 31.

4. First, applicants argue that Dorigatti et al. fail to disclose of the 65% partial benzyl ester of HA as pointed out in the amended claims. The prior art reference of Dorigatti et al. provides the skilled artisan to produce a variety of esters of HA, including full and partial esters of HA. Dorigatti et al. also provide numerous examples, as do

applicants, of suitable alcohols, such as aliphatic, araliphatic, cycloaliphatic, or heterocyclic alcohols, (see pages 7 and 8). In addition, Dorigatti et al. provide various examples of making esters of HA that have a variety of degrees of esterification, in particular from partial esterifications ranging from 50% to 100%. Surely, one having ordinary skill in the art is provided with the instruction and motivation to produce sundry esters of HA not only with a variety of alcohols but also in various degrees of esterifying the carboxylic acid moiety of HA. In addition, the quantitative determination of an ester group is carried out using well-known methods that are established in the art of quantitative organic chemistry.

5. Second, applicants purport that Dorigatti et al. is directed to HA benzyl esters, which were either totally esterified or have a very high degree of esterification. The prior art reference of Dorigatti et al. is not only directed to making and using benzyl esters of HA with varying degrees of esterification. In fact, Dorigatti et al. is an excellent reference for teaching the skilled artisan to make other types of esters of HA with a variety of alcohols, as in the instant invention. Accordingly, it would have been obvious to one having ordinary skill in the art to generate a variety of amounts of esters and partial esters of HA, especially amounts that range from the examples of Dorigatti et al. for esterifications from about 50% up to and including 100% full esterification.

6. Third, the only example of Dorigatti et al. only disclose of HA esters with aliphatic alcohols which are completely different from the present HA esters with benzyl alcohol. Applicants further state that the only example of Dorigatti et al., wherein HA partial esters having a lower esterification degree are disclosed in Examples 1, 2 and 8. In

examples 1, 2 and 8, Dorigatti et al. teach the skilled artisan of which disclose the propyl ester of HA, the isopropyl ester of HA, and the butyl ester of HA, HA esters with aliphatic alcohols, which are completely different from the present benzyl alcohol, respectively. The prior art reference of Dorigatti et al. teach the skilled artisan produce a variety of esters of HA, including full and partial esters of HA with varying degrees of esterification, see the many examples as described in Dorigatti et al. In addition, Dorigatti et al. provide numerous examples, as do applicants, of suitable alcohols, such as aliphatic, araliphatic, cycloaliphatic, or heterocyclic alcohols. It would have been obvious to skilled artisan to make various types esters of HA in a variety of degrees of esterification, including 65% esterification of HA.

7. Fourth, the 50% esterified HA derivatives of Dorigatti et al. are salified with a metal on the remaining carboxylic acid groups of HA, which vary from the instantly claimed HA esters. Here, applicants attempt to state there is a distinction between the 50% esterified HA derivatives of Dorigatti et al. because these HA derivatives are salified with a metal on the remaining carboxylic acid groups of HA. It is first pointed out that Dorigatti et al. specifically state that this is optional, as in the statement, "[i]n the esters obtained according to this procedure or according to the other procedure described hereafter, free carboxylic groups of the partial esters may be salified, *if desired*", (as cited from page 18, lines 24-27 and the emphasis was added). Moreover, even assuming *arguendo* that there is a distinction between salifying the remaining carboxylic acid groups of HA, the instant claims are open-ended and thus would embrace a various other elements. However, the skilled artisan is clearly provided with

guidance and motivation from Dorigatti et al. to make variety of esters of HA in degrees of esterification, which obviously embraces the 65% esterification of HA. In addition, Dorigatti et al. teach of making partial benzyl esters of HA that have a degree of esterification of 75%, see examples 28 and 29 of Dorigatti et al. Furthermore and especially in view of the variety of examples, the level of skill possessed by the artisan, and the motivation afforded to the artisan from the teachings of Dorigatti et al., it would have been clearly obvious to one having ordinary skill in the art to make esters of HA with varying amounts of esterification and with a variety of alcohols.

8. Fifth, applicants allege that the instantly claimed benzyl esters of HA with a degree of esterification of 65% are superior to the Dorigatti et al. esters of HA as demonstrated in examples 12, 14, 27, 29, and 31. Moreover, applicants disagree that the prior art reference of Dorigatti et al. renders the instant invention obvious because Dorigatti et al. do not provide motivation to present benzyl esters having a specific degree of esterification of 65%. Dorigatti et al. specifically teach of making partial benzyl esters of HA that have a degree of esterification of 75%, see examples 28 and 29 of Dorigatti et al. More importantly, the sundry examples provided by Dorigatti et al. are in fact that, just examples to teach and provide the skilled artisan with the motivation to make various types of esters of HA. For these reasons, one having ordinary skill in the art is taught of making biocompatible non-woven fabric biomaterials for use in surgery and specifically for the regeneration of tissues, (see abstract and summary of the invention on pages 3 and 4 of Dorigatti et al.).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. The rejection of claims 36-42 under 35 U.S.C. 103(a) as being unpatentable over Dorigatti et al. of WO 93/11803 is maintained and repeated. Dorigatti et al. teach of biocompatible non-woven fabric biomaterials for use in surgery and specifically for the

regeneration of tissues. In addition, Dorigatti et al. teach that these biomaterials are comprised of esters of hyaluronic acid with aliphatic, araliphatic, cycloaliphatic, or heterocyclic alcohols, (see pages 7 and 8). Furthermore, Dorigatti et al. disclose that this biomaterial of the partial esters of hyaluronic acid ester have less than 85% of the groups esterified. In fact, Dorigatti et al. teach that 50% of the carboxylic acid groups are esterified in Example 1, (see pages 18-19) and 75% of the carboxylic acid groups are esterified in Example 7, (see page 24) and that 85% of the carboxylic acid groups are esterified in Example 15, (see pages 27-28). In addition, the prior art reference of Dorigatti et al. do not claim nor teach of the incorporation of cellular components, (see claims 1-29). Dorigatti et al. also teach of the benzyl esters of hyaluronic acid in Example 12, (see page 26). Dorigatti et al. also teach that the useful esters include esters which derive from alcohols which themselves possess a notable pharmacological action, (see page 11, lines 4-9 and from page 11, line 30 to page 17, line 17). Furthermore, this prior art invention is directed to use in a variety of surgical procedures, namely orthopedics, (see pages 39 and 40). Even though Dorigatti et al. do not specifically teach of excluding cellular components and products in these biomaterials of hyaluronic acid ester, it is noted that Dorigatti et al. do not teach in this patent of including cellular components and products in this biomaterial of esters of hyaluronic acid. Clearly, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize the teachings of Dorigatti et al. to arrive at the instant invention because Dorigatti et al. do not disclose of including cellular components and products in this biomaterial of esters of hyaluronic acid.



***Obviousness-type Double Patenting***

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

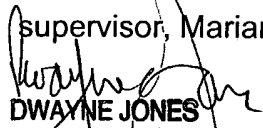
Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 36, 37, 41-45 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 14, 15, and 1 of U.S. Patent No. 6,509,322 in view of Dorigatti et al. of WO 93/11803. U.S. Patent No. 6,509,322 teaches of a method of accelerating tissue repair in an open wound comprising treating a tissue of said open wound with an effective amount of hyaluronic acid that has been esterified or partially esterified with an alcohol. Dorigatti et al. teach of biocompatible non-woven fabric biomaterials for use in surgery and specifically for the regeneration of tissues. In addition, Dorigatti et al. teach that these biomaterials are comprised of esters of hyaluronic acid with aliphatic, araliphatic, cycloaliphatic, or heterocyclic alcohols, (see pages 7 and 8). Furthermore, Dorigatti et al. disclose that this biomaterial of the partial esters of hyaluronic acid ester have less than 85% of the groups esterified. In fact, Dorigatti et al. teach that 50% of the carboxylic acid groups are esterified in Example 1, (see pages 18-19) and 75% of the carboxylic acid groups

are esterified in Example 7, (see page 24) and that 85% of the carboxylic acid groups are esterified in Example 15, (see pages 27-28). In addition, the prior art reference of Dorigatti et al. do not claim nor teach of the incorporation of cellular components, (see claims 1-29). Dorigatti et al. also teach of the benzyl esters of hyaluronic acid in Example 12, (see page 26). Dorigatti et al. also teach that the useful esters include esters which derive from alcohols which themselves possess a notable pharmacological action, (see page 11, lines 4-9 and from page 11, line 30 to page 17, line 17). Furthermore, this prior art invention is directed to use in a variety of surgical procedures, namely orthopedics, (see pages 39 and 40). Clearly, it would have been obvious to one having ordinary skill in the art to utilize the biocompatible tissue preparations of U.S. Patent No. 6,509,322 in view of the Dorigatti et al. since both are directed to the tissue repair.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. C. Jones whose telephone number is (571) 272-0578. The examiner can normally be reached on Mondays, Tuesdays, Thursday, and Fridays from 8:30 am to 6:00 pm. The official fax No. for correspondence is (703) 872-9306.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marianne Seidel, may be reached at (571) 272-0584.

  
**DWAYNE JONES**  
**PRIMARY EXAMINER**  
Tech. Ctr. 1614  
February 26, 2004